Maniola (Epinephele) jurtina (L.) (Lep. Satyridae) and its Forms

By George Thomson

Introduction

I vividly remember the summer of 1958 as it produced an abundance of *Maniola jurtina* L. in South Perthshire. Whether this profusion was purely a local phenomonon or more widespread I have not been able to find out, but for something like two weeks the insects swarmed the fields in a park near Dunblane and in that period I collected the butterflies, often well into the evening. On examination I was very surprised to notice that a number of specimens resembled the sub-species *splendida* B. White of North West Scotland. A small number of specimens was sent to the British Museum (Natural History) where Mr Goodson compared the specimens with those in the British Museum collection. His conclusion was that all but two of the specimens were of the *splendida* form, though not as dark, on average, as those from some of the Western Isles. The two others he thought were intermediate, representing a cline between *splendida* and the typical *jurtina*. This same year produced a number of forms including *addenda* Mousley, *fracta* Zweigelt and many albinos. Following years showed that the appearance of *splendida* like butterflies was not unusual in this area, but just a dozen miles to the south (between Stirling and Falkirk) the population consisted of very typical British *jurtina*. From this beginning I became involved in a study of this butterfly throughout its range and this paper is the culmination of some ten years' work.

Literature was, at first, difficult to come by, as were specimens, but this was by no means the main problem. Perhaps few butterflies have suffered so much from the name wielding entomologist. Numerous names have been used to indicate similar forms, often these being the result of excessive exposure to sunlight (a fault also evident in the naming of some varieties of *Lycaena phlaeas* L.). However, the works by Lempke (1935, Lambillionea **35**: 71-78, 101-108, 147-153, 172-185), Graves (1930 Entomologist **63**: 49-54 and 75-81 and Verity (1953, Le Farfalle diurne d'Italia vol. **5**: 260-271) made this paper possible, and I would like to pay tribute to these entomologists for their work on this butterfly. The 1935 paper has been the 'springboard' for this present work which I hope will both bring our information on *jurtina* up to date and tie up many of the loose ends which surround it. However, there are still great gaps in our knowledge, and I would like to appeal to entomologists not to neglect this interesting species, as has been the case in the past, and the fact that we still have a great deal to learn about the eastern forms of *jurtina* shows that there is still ample scope for work on this insect.

Of necessity, I have kept my descriptions as brief as possible. However, I hope that if anyone wishes to read the original descriptions or follow up the many references which I have cited he will search it out for himself. I have been careful to avoid ambiguity, and, in the case of the races, descriptions are inevitably more lengthy.

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Maniola jurtina L.

(*Maniola* Schrank, 1801, Fauna Boica, 2, 1: pp. 152 and 170. Type: *jurtina* L.

Epinephile Hb., 1818, Verz. bek. Schmett. p. 59. Type: *jurtina* L. See Hemming, 1934, The Generic Names of Holarctic Butterflies, 1, 42-43.)

Synonymy:

jurtina L. 1758, Syst. Nat., X, p. 475, No. 104 (female).
janira L. 1758, loc. cit., No. 106 (male).
pamphilus Hoefn. 1766, Berl. Mag., 11, p. 39.
monoculus Goeze. 1779, Entom. Beitr., 3, 1, p. 285.
mirtyllus Fourcroy 1785, Entom. Par., 11, p. 239.
janirus Herbst. 1796, Natursyst. Schmetterl., 8, p. 168.
lemur Schrank 1801, loc cit., 11, 1, p. 175.
telmessia Zell. was considered to be a sub-species of *jurtina* but has been found to be a distinct species. (See: Le Cerf, 1912, Bull Soc. Ent. France, pp. 225 and 231.) The forms previously ascribed to *jurtina* which should now be placed with *telmessia* are—*kurdistana* Ruhl., *oreas* Le Cerf and *maniolides* Le Cerg.

Distribution

Europe (rare north of 62° in Sweden), the Canary Islands, Africa north of the Atlas Mountains, most of the Western and Central Mediterranean Islands to Western Siberia and North Persia. I have no accurate information about how far the species penetrates the Soviet Union but I am sure that Verity's 'Russia orient' does not refer to eastern U.S.S.R. It does reach Leningrad, however. It is not uniformly common throughout its range, as we might assume from current books, but pretty well abundant in most of Central Europe up to about 4,000 ft. It becomes much more local in the North West of Scotland and, in the south, it is missing from large areas of the Alps and the interior of the Iberian Peninsula. In Portugal and the Mediterranean Islands it becomes a shade-loving insect, becoming rarer as one goes eastward.

Flight Period

I had some difficulty in tracing emergence times for *jurtina* in its more distant localities. It appears, however, that in Central Europe the first males emerge about the beginning of June and only exceptionally before then. In north Scotland and Scandinavia they do not appear until early July. In these localities the flight period might be only until the end of August, though in the south and in very warm summers they are still found at the end of September. This is certainly the case on the Isles of Scilly. In Southern Europe according to Verity the butterfly can be found from May until October, but I have information that on the Canaries first males come out towards the end of March. I am indebted to Guido Lanfranco who sent me the following description of the situation in Malta:

"They (*jurtina*) have only one brood, but some come out in April-May, and others in June-July. The last group have paler female colouring than those of the first group, but there is only one brood. They are not seen in December-March normally."

This seems to indicate that the flight period on that island extends from April to November (perhaps longer in some years).

The problem of whether *jurtina* is single or double brooded has been discussed almost as much as any other aspect of the butterfly, but in spite of the unusual 'double emergence' in warm climates there appears to be little doubt about Verity's conclusion that it is univoltine. (See: Verity 1953, loc. cit., p. 265.)

Forms

The practice of naming varieties, aberrations and forms is often criticised, particularly if gradations occur between them and the 'normal' form. Corbet and Pendelbury (1956, Butterflies of the Malay Peninsula, p. 42) state:

"It is undesirable that individual varieties of this nature should receive distinctive names. . . ."

This I cannot accept. There is a great value in many of the names given to variations, even if they only facilitate brevity! However, I do think that in cases of 'normal' variation where there is a very gradual change from one extreme to another it is desirable to name only the extremes—a case in point being the extent of fulvous in *jurtina*. Lempke (1935 loc. cit.) called most named variations of *jurtina* below sub-specific status 'aberrations' though he made some small effort to distinguish 'abs.' from 'vars.' in one or two cases. In his more recent paper (1957, Tijdschr. Ent. **100**: 459-467) he 'lumped' all these under 'forms', while Verity (1953, loc. cit.) tactfully avoided the use of any of these prefixes. I do not like the term 'aberration' as it conjures up a vision of a two-headed Lepidopterous monster (which I am told should be called a 'monstrosity'—heaven forbid!) and I notice Prof. E. B. Ford avoids the term. Although there is a great deal to be said for distinguishing between 'vars.' and 'forms', I can find no criterion which would be applicable to every case. I have therefore followed Lempke's example and used the term 'form' for all varieties below sub-specific status. This clearly is a solution which leaves the situation flexible, so that later authors can make further distinctions if they so desire.

The system of nomenclature employed by Leeds (1950, Proc. Trans. South London ent. Nat. His. Soc. 1948-9) and other papers is admirable in theory, but until taxonomists can spend time revising the varieties of *all* Lepidoptera the present system will have to suffice. I have, therefore, included the names used by Leeds for forms not already described, but not those which are, to all intents and purposes, synonyms.

A. Size

Generally speaking *jurtina* does not vary much in size within each geographical race, but there is a tendency for the southern forms to be much larger than the northern ones. Dwarf forms are therefore more striking when they occur.

f. *nana* Stephen 1923, Iris, p. 23. A dwarf form. Muschamp records a

female with a wingspan of 31 mm. and males of 32 and 33 mm. Small specimens occur frequently in the Swedish race but the smallest female I have seen is an English one of similar dimensions to the one mentioned.

f. (? race) *parvula* Stauder, 1915, Z. wissen Insetenb., **11**, pl. plate 2, fig. 16. Described as a dwarf race of *hispulla* Esp. from Monte Faito and S. Angelo (Sorento) and having a size similar to a female *Coenonympha pamphilus* L. Unfortunately I have been unable to trace any other mention of this form and, as Lempke makes no mention of it, I suspect that it is merely a very remarkable form.

f. *major* Leeds, 1950, loc. cit. p. 107. This name refers to strikingly large specimens (males over 51 mm.; females over 56 mm.).

B. Albinism

Jurtina is particularly susceptible to albinism, so much so that it has led to the ridiculous situation where patches caused by malformation of the scales have been given different names if they have occurred by accident in different areas of the wings. This first form of albinism, which manifests itself in (usually) assymetric patches, sometimes occurs in a symetric form, often covering all of the wings, is is clearly the same aberration. I, therefore, consider it superfluous to give more than one name to these specimens.

f. *brigitta* Ljunch 1799, Vet. Akad. Nya Handl., **20**, p. 147, pl. 2, figs. 6 and 7. The original description refers to a complete form of the above-mentioned aberration, which leaves the wings *very* pale with the fulvous band of a pale yellow/red colour. This name, I suggest, should be applied to all specimens which have these light patches, as they are merely incomplete forms of Ljunch's type.

= *semialba* Brand 1949, Bull. Soc. Emulation du Doubs, p. 60. In this form only the margins remain.

= *wautieri* Lmbll. 1905, Rev. Mens. Soc. Ent. Nam. p. 19: 1932, Lambillionea, pl. 11, fig. 2. Patches on both wings.

= *dextro-albescens* Tutt, 1908, Ent. Rec. **20**, p. 221, refers to a form with a patch on the right wing.

= *leucothoë* Cabeau, 1923, Rev. Mens. Soc. Ent. Nam, p. 24. This is the ultimate form of this aberration in which even the legs. head and antennae are pale.

A second form of albinism is that which produces a greyish dusting on the wings. Once again names have been used to describe degrees of this form and I have grouped some of them together. I was tempted to include the 'metallic' types in this group but as yet I am not convinced that they are caused by the same factor.

f. *cinerea* Cosm. 1892, The Naturalist, p. 264. This name is used to describe the form with an ashy scaling on all wings. I suggest that this should be used to describe any variant of this.

= *grisea-argantacea* Obthr. 1909, Lep. Comp., III, p. 385.

=*grisea-aurea* Obthr. 1909, loc. cit.

= *cinerascens* Fuchs. 1892, Jahrb. Nass. Ver., **45**, p. 85. The hind only are dusted with grey in this form.

I have examined specimens of f. *cinerea* and compared them with those specimens which have a somewhat similar scaling but have, in addition, a metallic sheen and I am not convinced that they are the same. I have, therefore, separated the following forms from *cinerea*.

f. *illustris* Jach. 1895, Soc. Ent., **10**, p. 65. Lempke (1935 loc. cit. p. 77) states that this form is intermediate between *cinerea* and the type, but the original description mentions a metallic sheen which would separate it from that form. This name should be applied to specimens which have a greyish or grey/blue scaling combined with metallic sheen.

= *uhryki* Aigner 1898, Rev. Lapok, V, p. 93, approaches *illustris*—from Hungary.

= ♀ *marmorea* Lmbll. 1903, Rev. Mens. Soc. Ent. Nam, p. 66, has a marbling or grey/blue, and with the underside medial band well marked.

= *commacula* Leeds, 1950, loc. cit., p. 102.

f. *glabrata* Leeds, 1950, loc. cit., p. 103, is perhaps identical to *illustris* —described as having a 'greasy look'.

f. *radiata* Frohawk, 1938, Var. Brit. Butterfl., pl. 9, fig. 1. I am not sure which group this falls into (if any). It is an albino form with the ground colour retained around the nervures.

f. *testacea* Schille, 1922, Z. Oest. E.V., **7**, p. 19, is a form which has the forewings chocolate brown, whitish towards the apex, on which the androconial mark stands out strongly. Hindwings pale with darker veins and margins. This is a very peculiar form of albinistic *jurtina*.

f. *subtis-albida* Silbernagel, 1943, Acta Soc. ent. bohem., **40**, p. 4, from Bohemia. The male type of this form is described as having the underside forewings of a very pale yellowish colour through which shines the upperside markings. The margins, upperside and underside hindwings remain normal.

Another albinistic tendency is that on the fulvous band on the upperside, thus—

f. *pallens* Th.-Meig. 1889, The Naturalist, **11**: 74, was a race described from the Pyrenees. Lempke (1935 loc. cit., p. 101) points out that Rondou (1932, Ct. Lep. Pyr., p. 33) does not mention this race. The apical patch is pale yellow in this form.

= *tincta* Blackie 1920, Entomologist, **53**: 277.

= ♀ *alba* Blackie 1920, loc. cit.

= ♀ *intermedia* Blackie 1920, loc. cit., p. 278, is the form in which this patch is of a creamy yellow colour. This is the typical form in many areas.

=*frohawki* Blackie, 1950, p. 87, refers to the form in which the normally fulvous band is replaced by anything from pure white to pale yellow.

Clearly the distinction between 'pale yellow' and 'creamy yellow' is a slight one and very similar specimens of these forms can be obtained by exposing normal specimens to excessive sunlight. Old specimens are, therefore, more likely to be f. *intermedia* than freshly emerged ones. The name *pallens* should be reserved for specimens in which the fulvous is much paler than normal because of some structural or genetical reason and not through exposure to sunlight.

f. ♀ *semi-intermedia* Lempke, 1935, loc. cit. refers to a specimen with only part of the fulvous patch changed to white. This is obviously the result of some different factor from that which produces the partial *pallens* forms.

C. *Variation in Ground Colour*

f. ♂ *nigro-rubra* Lmbll. 1903, loc. cit., p. 66. In this variety the ground colour is blackish brown (*Erebia*-like) with reddish brown sub-apical

blotches. This colouration is normal in many parts of the insect's range.

[f. *occidentalis* Poinneau 1924, Bull. Soc. Sc. Nat. Ouest., series IV, pl. IV, p. 58, referred to a variety of *jurtina* from Brittany which is 'reddish brown'. Lempke (1935, loc. cit. p. 176) suggested that this might be a race but it is now almost certain that it is a synonym of *phormia* Frhst.]

f. *nigrianira* Forsyth-Johnstone, 1941, Entomologist, **74**: 243, is a female with the upperside forewings dark greyish brown, the fulvous patch almost absent, hindwings of a similar colour. Margins and transverse band on the underside forewings much extended and very dark, the whole having a blackish suffusion. Hindwings black with central area a shade lighter.

f. ♀ *huenei* Krul., 1908, Soc. Ent., **23**: 3, has the fulvous band considerably darkened because of a dusting of dark scales (? ground colour).

f. *antiultrafulviscens* Leeds, 1950, loc. cit. p. 101. This is a form in which the basal part of the underside forewings is distinctly darkened—sometimes reddish. This is normal variation.

f. *concolorata* NEW. This very attractive form has the part of the underside forewings from the medial transverse line to the base of the very same dark colour as the upperside ground colour, leaving the subapical band (which is somewhat lighter than usual) in striking contrast. A specimen of the form was taken by myself near Dunblane, Perths., 15.vii.1965 and is in my own collection.

f. ♂ *suffusa* Tutt, 1896, Brit. Butt. p. 404, is a male without orange on the upperside forewings.

f. ♂ *hertha* Heinrich 1909, Berl. E.Z., 54, p. (3), is a male with the orange of the forewings forming a band, broken or not by the nervures.

= *rufocincta* Fuchs. 1900, Jahrb, Nass., V, 53, p. 37.

= *fulvopincta* Heinrich, 1923, Deutsche E.Z., p. 247.

= *ierniformis* Graves, 1930, loc. cit., p. 63.

f. ♂ *feminea* Graves, 1930, loc. cit., p. 54, is a male with the fulvous markings on the hindwings.

f. ♀ *pseudomas* Ckll., 1889, Entomologist, **22**, p. 26, is a female with only male fulvous markings.

f. ♀ *rufocincta* Fuchs, 1900, loc. cit., is the normal form of the female which has fulvous marks on the hindwings.

f. ♀ *nuragiformis* Vrty. 1916, Ent. Rec. **28**, p. 169. This is an extreme form of the normal variation which occurs in the south of Europe in which the fulvous marks of the female are so highly developed that only the margins remain on both wings, and the base of the hindwings as in the related species *Maniola nurag* Ghil.

f. *tithoniformis* Vrty. 1916, loc. cit., has these characters further developed. Apical eyespot very large. This form has been recorded from Corsica, Sardinia and North Africa.

f. ♀ *antifulva* Lempke, 1957, loc. cit., p. 461, has the fulvous greatly extended on the forewing only—no fulvous on the hindwings.

D. Variation in the Apical Eyespot

f. *anommata* Vrty. 1904, Entomologist, **37**, p. 56, is a very rare form in which the apical eyespot is completely lacking on both upperside and underside. Verity's name really refers to specimens without the oceli 'or almost so', but as Leeds (1950, loc. cit., p. 104) has described a form with a greatly reduced eyespot it would be best to reserve the name *anommata* for specimens without the spots.

=*oblitescens* Schultz, 1908, Ent. Z., **21**: 279.

= *obliterans* Seitz 1908, Seitz 1, p.140.

=*inocellata* Kiss, 1909, Rev. Lapok, **14**: 153.

= *anomala* Rol., 1910, Berge Rebel: p. 52.

f. *antiparvipuncta* Leeds, 1950, loc. cit., has the apical eyespot considerably reduced. This form is very much more common than *anommata* Vrty.

f.*anticrassipuncta* Leeds, 1950, loc. cit., has the apical eyespot greatly enlarged.

f. *caeca* Rebel, 1910, loc. cit. This form is common in the male and rare in the female having the apical eyespot without the white 'pupil'.

= *coeca* Rocci, 1911, Contr. Lep. Piemonte, **1**, p. 27.

= *caeca* Ksns., 1911, Trav. Soc. Volb., p. 50, pl. 1, fig. 3.

= *caecoides* Strand, 1925-7, Arch. für Naturg, **91**, A.12, p. 281.

f. *erymanthoides* Strand, 1919, Arch. für Naturg, A.4, p. 16. This form is one in which the apical eyespot is split due to an encroachment of the ground colour.

= *biocellata* Lempke, 1935, loc. cit., p. 148.

f. *bioculata* Rebel, 1910, loc. cit., p. 52, is the very common form of the female with two white 'pupils' in the apical eyespot. Very rare in the male.

f. *addenda* Mousley, 1903, Ent. Rec., **15**, p. 160, can be applied to any form which has from 1 to 4 additional eyespots behind the apical eyespot or towards the apex on the upper or underside.

f. *erymanthea* Esp., 1783, Eur. Schmett., **1**, p. 180, combines the characters of *addenda and ocellata.*

f. *subhispulla* Strand, 1912, Ent. Z., **25**, p. 254. This form was figured by J. Th. Oudemans in Tijdschr. v. Entom. **48**: 13, pl. 4, fig. 4 (1905) and refers to a combination of *erymanthoides* and *rufocincta* with *huenei* colouring. Lempke (1957, loc. cit., p. 463) mentions a specimen combining *erymathoides* and *antirufa* and calls it *subhispulla.*

E. Spotting on the Underside Hindwings

This interesting feature of *jurtina* was used by Prof. E. B. Ford and his colleagues for their work on the butterfly in the South of England and the Isles of Scilly, the results of which can be read in Ford (1945, Moths, pp. 215-222) and Dowdeswell, Ford and McWhirter (1960, Heredity, **14**: 333-364). Their research showed that a sudden ecological change is sufficient to change the frequency of the spotting on the underside hindwings in a very short time. Clearly if this is the case it is possible that a series of *jurtina* taken in one year could be quite different from that taken in the same area in following years. Perhaps much of the confusion which has arisen around the races of *jurtina* has been caused by entomologists describing forms or races from specimens caught in one or two years, even although they might have examined a considerable number of specimens. The *jurtina* type has three spots in the male and an unspecified number in the female (*janira*).

f. *infra-pupillata* Lempke 1935, loc. cit., p. 150, is a form which has one or more white pupilled black spots on the underside hindwings.

f. *biocellata* Tutt, 1910, Ent. rec. **22**: 158. Of this form Lempke writes: '. . . Described after a male from the Sarnthal in Tirol, and having "one small apical eye on the upperside and underside of the forewings, and two very marked ones on the underside of the hindwings". The name denotes

a very special case of *infra-pupillata* and should therefore be suppressed.'

I do not understand Lempke's reasoning here. If *biocellata* is a special case of *infra-pupillata* the converse is also the case and and Lempke's name should go. However, I consider them to be two different forms. *Biocellatta* is, therefore a combination of *infra-pupillata* and *antiparvi-puncta.*

f. *infra-impunctata* Lempke, 1935, loc. cit., p. 150, lacks the black spots on the underside hindwings.

F. Other Hindwing Variation

The descriptions of the next three aberrations caused me some concern as they represent stages in a development towards the *hispulla* underside. Faded or worn Scottish females look very much like *grisea* and I suspect this is the case throughout Central Europe.

f. *grisea* Tutt, 1896, loc. cit., p. 404, has the band of the underside hindwings of a pale grey colour.

f. *violacea* Wheeler, 1903, Bull. Sitz. p. 113, has this band tinted with 'heliotrope'. Lempke says that this is not found in cold climates.

f. *luigionii* Rost., 1908, Bull Soc. Zoo. It., series II, IX. The description given of this form refers to two different varieties—a male with greyish yellow band and a female with a bluish white speckled hindwing band. I consider the female description to be similar to *violacea* and suggest that the name *luigionii* should be reserved for the male form.

f. *fracta* Zweigelt, 1918, Z. Oest. E.V., 3, p. 11, fig. 3. This is a female form in which the light hindwing band is interrupted in cell IV by a dark bar.

f. ♀ *rectoformis* NOV. Description: Underside forewing light subapical band crossed by a bar of the same dark colour as the margin and transverse line on vein 3. Underside hindwing with very narrow light band in rather dark brownish ground. The band does not reach the inner margin as in most females but stops before vein 2. The general effect is an underside which resembles the normal upperside. The type was taken in Dunblane 20.vii.1965 and is in my collection.

f. *infrareticulata* Lempke, 1957, loc. cit., p. 462, has the underside hindwings unicolourous grey, dusted with small dark striae which are also present along the margin and apex of the forewings.

G. Other Forms

f. *pauper* Vrty., 1916, Ent. Rec., **28**, p. 169, is a form combining a number of aberrant characteristics. The forewings are more pointed than the type and the hindwings more dentate (f. *costa-cava* Cabeau). The apical eyespot, which is small, has an additional black spot behind it. The yellow marking is very much reduced, sometimes broken by the nervures. Verity states that he has found no intermediate from.

f. *costa-cava* Cabeau, 1904, Rev. Soc. Ent. Nav., p. 66, pl. 1, has the hindwings indented between the veins..

f. *brevipennis* Lempke, 1957, loc. cit., p. 467, has all the wings 'too short'.

f. *latimargo* Peerdeman, 1962, Ent. Berichten 22, No. 3, has the marginal band on the underside forewing distinctly broadened at the inner angle.

Homeosis: Occasional specimens occur which have on the underside hindwings streaks or patches of fulvous scaling.

Gynandromorphs: These are extremely rare but not unknown.

(To be continued)